

Amendments to the Claims:

This listing of claims will replace all prior versions of claims in the application.

1. (Currently Amended) A method for cleaning a flat media workpiece having a top surface and a bottom surface, comprising:

spinning the workpiece;

applying a liquid from one or more liquid outlets onto a ~~forming a boundary layer of a heated liquid on the bottom~~ surface of the workpiece, with the liquid heated to about 25-200°C, and with the heated liquid from the liquid outlets forming a liquid layer on the surface of the workpiece;

controlling the thickness of the liquid ~~boundary layer of heated liquid~~;

providing ozone into the environment around the workpiece; and

directing a liquid jet from one or more jet nozzles ~~at the bottom~~ surface of the spinning workpiece, with the liquid jet moving at a speed sufficient to penetrate through the liquid ~~boundary~~ layer and to physically dislodge a contaminant on the workpiece.

2. (Currently Amended) The method of claim 1 with the liquid outlets comprising spray nozzles, further comprising:

placing the workpiece into a processing chamber; and

forming the ~~boundary layer of heated liquid on the bottom~~ surface of the workpiece by spraying the heated liquid onto the ~~bottom surface of the~~ workpiece from the spray nozzles, with the spray nozzles on a sidewall of the processing chamber.

3. (Previously Presented) The method of claim 1 where the liquid jet is pressurized to about 500-2000 psi.

4. (Previously Presented) The method of claim 1 where the liquid jet is substantially perpendicular to the workpiece surface.

5. (Previously Presented) The method of claim 1 further comprising the step of heating the liquid jet to 25-99 degrees C.

6. (Original) The method of claim 1 where the ozone is provided as a dry gas into the environment around the workpiece.

7. (Previously Presented) The method of claim 1 where the ozone is provided into the environment around the workpiece by introducing ozone into the liquid used to form the liquid jet.

8. (Previously Presented) The method of claim 1 further comprising the step of spinning the workpiece at greater than 300 rpm.

9. (Previously Presented) The method of claim 2 where the heated liquid further comprises a member selected from the group consisting of hydrofluoric acid, hydrochloric acid, ammonium hydroxide, and hydrogen peroxide.

10. (Previously Presented) The method of claim 1 where the heated liquid comprises a member selected from the group consisting of sulfuric acid, phosphoric acid, and halogenated hydrocarbons.

11. (Cancelled).

12. (Previously Presented) The method of claim 1 further comprising the step of irradiating the workpiece with electromagnetic energy including at least one of ultraviolet, infrared, microwave, gamma or x-ray radiation.

13. (Previously Presented) The method of claim 1 further comprising the step of moving the liquid jet relative to the workpiece, so that substantially all areas of the workpiece surface facing the jet are exposed at least momentarily to the jet.

14. (Currently Amended) The method of claim 1 where the liquid jet is ~~substantially perpendicular to the workpiece~~ ozone is provided by introducing ozone into the liquid applied from the liquid outlets.

15. (Cancelled).

16. (Cancelled).

17. (Previously Presented) The method of claim 13 further including the step of moving the liquid jet on a swing arm below the workpiece within a chamber housing the workpiece.

18. (Cancelled).

19. (Cancelled).

20. (Previously Presented) The method of claim 1 further comprising introducing sonic energy into a nozzle forming the liquid jet.

21. (Cancelled).

22. (Previously Presented) The method of claim 1 where the liquid jet has a diameter of from about .5-10 mm.

23. (Cancelled)

24. (Original) The method of claim 13 where the relative movement occurs at a rate of from about .5 – 500 linear mm per second.

25. (Previously Presented) A method for removing an organic contaminant from a workpiece comprising the steps of:

placing the workpiece into a process chamber;

heating a liquid to 25°C to 99°C;

spraying the heated liquid onto a surface of the workpiece from spray nozzles on sidewalls of the chamber;

spinning the workpiece at greater than 300 rpm to help to form the heated liquid into a layer, with the workpiece in a substantially horizontal orientation;

controlling the flow rate of the heated liquid onto the surface of the workpiece to control the thickness of the layer of heated liquid;

moving a high pressure liquid jet across the surface of the workpiece, with the high pressure liquid jet penetrating through the heated liquid layer and impacting against the surface of the workpiece, to help to remove a contaminant from the surface; and

providing ozone around the workpiece, with ozone diffusing through the heated liquid layer and chemically reacting with the contaminant at the workpiece surface, and with the chemical reaction between the ozone and the contaminant helping to remove the contaminant from the workpiece.

26. (Previously Presented) The method of claim 25 with the liquid jet directed to a bottom surface of the workpiece.

27. (Previously Presented) The method of claim 25 where the ozone is provided by supplying ozone into the liquid forming the liquid jet.

28. (Original) The method of claim 25 further comprising heating the workpiece.

29. (Previously Presented) The method of claim 28 where the heating is performed by heating the liquid jet.

30-38. (Cancelled).

39. (Previously Presented) The method of claim 1 wherein the liquid jet is at an oblique angle to the workpiece.

40. (Cancelled).

41. (Previously Presented) The method of claim 1 wherein the heated liquid is at a temperature in the range of about 40-97° C.

42. (Currently Amended) A method for processing at least one workpiece ~~one or more workpieces~~, comprising:

heating a first liquid;

forming the first liquid into at least one moving column of heated liquid;

entraining ozone gas into the column of heated liquid;

spinning the workpiece in a substantially horizontal orientation;

forming a layer of a second liquid on the spinning workpiece;

controlling the thickness of the layer of the second liquid;

directing the column of liquid at ~~substantially perpendicularly at a down facing surface of~~ the spinning workpiece, with the column of liquid penetrating through the liquid layer and impacting on the workpiece, to physically remove one or more contaminants from the workpiece, and with the entrained ozone gas in the column of liquid contacting the contaminant and chemically reacting with the contaminant.

43. (Cancelled)

44. (Previously Presented) The method of claim 43 further comprising introducing ozone gas around the workpiece and with at least some ozone gas diffusing through the layer of heated liquid and chemically reacting with a contaminant on a surface of the workpiece.

45. (Previously Presented) The method of claim 42 with the column of liquid having a diameter, and with the diameter ranging from about 0.5 mm to 10 mm.

46-49. (Cancelled).

50. (New) The method of claim 42 wherein the first liquid is substantially chemically the same as the second liquid.

51. (New) The method of claim 42 wherein ozone gas is entrained in the column of liquid by injecting ozone gas into the first liquid.

52. (New) The method of claim 1 wherein the liquid jet is directed at a down facing surface of the workpiece.